

July 14th, 2010: Areas of Wind Damage and a Handful of Tornadoes Across Mainly Southeast Minnesota and Western Wisconsin

NWS Damage Survey Results

Southern Dakota & Northern Rice Counties in Minnesota

A National Weather Service Storm Survey was conducted to assess damage that occurred in extreme northeast Rice County and portions of southern Dakota County.

The first tornado touched down about $\frac{3}{4}$ of a mile north of Highway 19 on Interstate 35. A two-ton truck was overturned on Interstate 35, causing damage to the median. The tornado then lifted approximately one mile east-northeast, and touched down again around the intersection of Jamaica Avenue and 320th St SW, where it tore down a street sign. The tornado then tracked east-northeast for about $2\frac{1}{2}$ miles across mainly farm fields, around 4.2 miles northwest of Northfield. It caused damage to a farm shed approximately $\frac{1}{4}$ mile east of the Jamaica Avenue and 320th St SW intersection. The tornado caused mainly tree and cornfield damage. Most of the trees were uprooted. Due to mainly tree damage and associated small shed damage, the tornado was rated an EF-0 with maximum sustained winds of 85 mph. The tornado width averaged between 25 and 50 yards, with a maximum of 75 yards at its widest point.



As the storm tracked east, there was a second brief touchdown directly north of Northfield, near 300th St on Highway 3. The tornado produced EF-0 damage, mainly to trees.

The storm continued to the east, and produced a third tornado northeast of Northfield. This tornado touched down at a farm house approximately 3.9 miles northeast of Northfield, near the

junction of 313th St and County Road 47. There, a metal shed was blown over a home for a distance of about 100 yards. There was some damage to the home, but most of the damage was associated with uprooted trees and debris from the metal shed. The tornado lifted $\frac{1}{4}$ mile east of the home and caused a semi-truck to be overturned on County Road 47. The tornado then touched down $\frac{3}{4}$ mile east of County Road 47 in a corn field. From there, it tracked approximately $\frac{1}{2}$ mile east before lifting at the intersection of County Road 59 and Cannon River Road. The tornado caused damage to a farm house along this path, and blew a storage shed 200 yards into their corn field. The tornado track was evident in the corn field as the corn stalks were flattened. The tornado also destroyed a camper at the farm house. The tornado was rated an Ef-1 with maximum sustained winds of 95 mph. The average width was 50 yards with a maximum width of 100 yards.



Storm Relative Velocity

NWS Storm Survey Damage Photos from Northfield Area Tornadoes



Storms in Dunn, Pierce, and St. Croix Counties in Wisconsin

A National Weather Service Storm Survey was conducted to assess damage that occurred in Pierce, St Croix and Dunn Counties of west central Wisconsin.

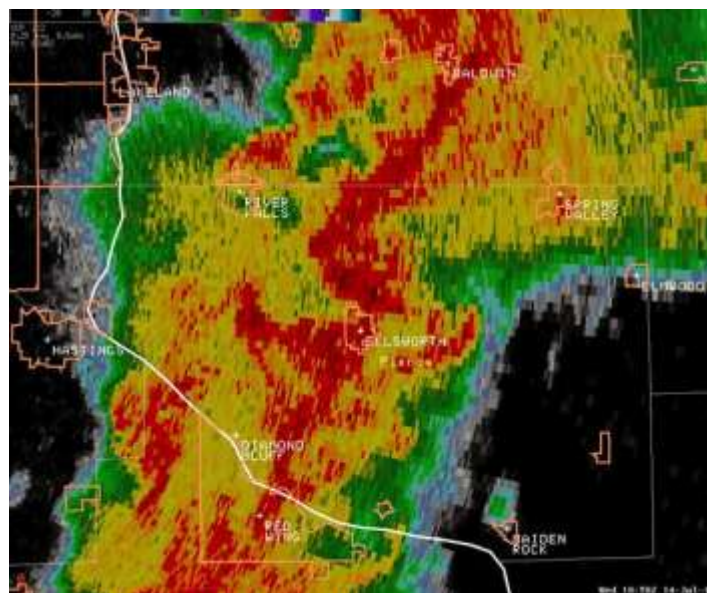
The first tornado was in St Croix County, and was rated an EF-1. It touched down 2 miles west-northwest of Hammond at 1054 AM CDT. It hit 30 houses, producing major damage at one of them. It was on the ground for 2.5 miles and produced mostly EF-0 damage. There was a brief time, though, when it strengthened to EF-1. Numerous trees were broken or snapped. The tornado dissipated 3 miles north of Hammond.

The second tornado was rated EF-2. It touched down at 2:54 PM CDT in northern Pierce County near the intersection of 640th Avenue and County Road O. It moved east-northeast for about 15 miles, finally dissipating 1/3 mile south of 770th Avenue 290th St. Barns and sheds were destroyed, and structural damage was noted at some homes. Many trees were broken or snapped. Strong downburst winds of 60 to 70 mph were associated with this tornado.

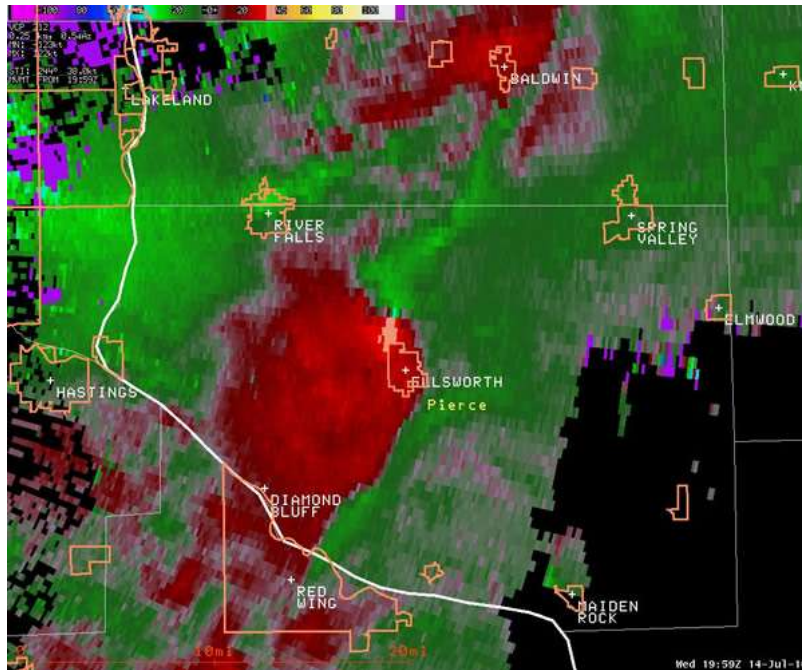
A third tornado was in northeastern Pierce County. It was rated an EF-2. Touchdown was at 3:06 PM CDT, about ½ mile south of El Paso. It moved northeast and dissipated 1 ½ miles southwest of Spring Valley, near the intersection of County Road CC and 790th Avenue. Strong downburst winds of about 60 to 70 mph were associated with this tornado.

The fourth tornado was rated EF-0, and affected northwestern Dunn County. It touched down about 2 miles west-northwest of Boyceville, at about 3:06 PM CDT. It was one the ground for only about ½ mile. It broke about 2 dozen trees and no structural damage was noted. Boyceville, Downing and surrounding areas were also hit with strong downburst winds of 60 to 70 mph.

NWS Chanhassen Radar Images from 2:59 PM CDT

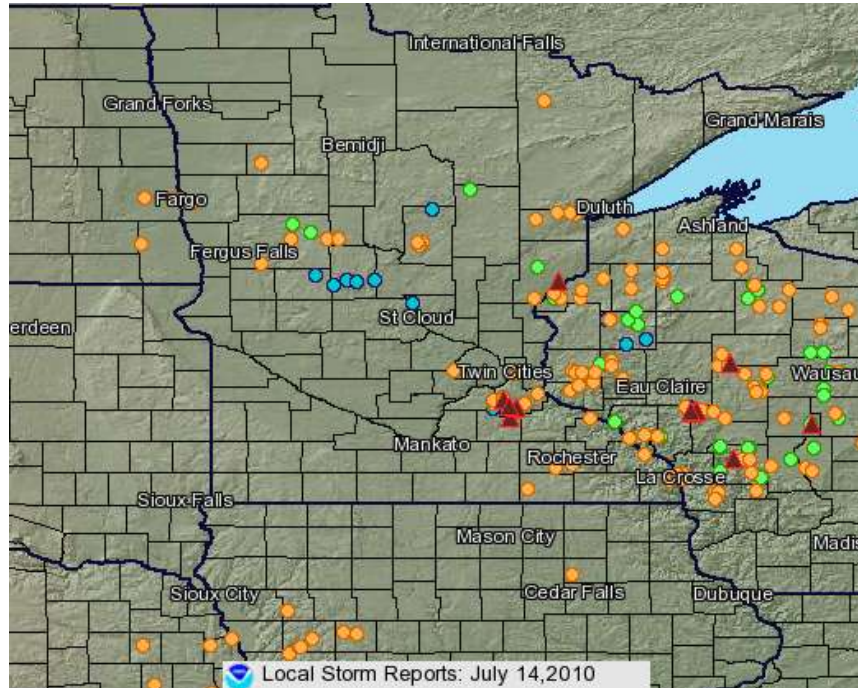


Reflectivity



Storm Relative Velocity

Storm Reports



PRELIMINARY LOCAL STORM REPORT...SUMMARY
 NATIONAL WEATHER SERVICE TWIN CITIES/CHANHASSEN MN
 407 AM CDT SAT JUL 17 2010

..TIME...	...EVENT...	...CITY LOCATION...	...LAT.LON...
..DATE...MAG....	..COUNTY LOCATION..ST..	...SOURCE....
..REMARKS..			
0704 AM 07/14/2010	TSTM WND DMG	SW BRANDON DOUGLAS	45.97N 95.60W MN TRAINED SPOTTER
SEVERAL 12 INCH DIAMETER TREES DOWN. TRAILER FLIPPED OVER.			
0722 AM 07/14/2010	HAIL M1.00 INCH	1 W MILTONA DOUGLAS	46.04N 95.31W MN TRAINED SPOTTER
0732 AM 07/14/2010	HAIL M1.25 INCH	4 NNE OSAKIS TODD	45.92N 95.12W MN PUBLIC
TODD COUNTY 911 CENTER HAD A REPORT OF LARGER THAN QUARTER SIZE HAIL ON THE NORTH END OF LAKE OSAKIS.			
0741 AM 07/14/2010	HAIL M1.00 INCH	5 W LONG PRAIRIE TODD	45.98N 94.97W MN FIRE DEPT/RESCUE
0750 AM 07/14/2010	HAIL M1.00 INCH	1 S LONG PRAIRIE TODD	45.97N 94.86W MN TRAINED SPOTTER
SOME HAIL A LITTLE LARGER THAN QUARTERS			
0802 AM 07/14/2010	HAIL M1.75 INCH	10 E LONG PRAIRIE TODD	45.98N 94.65W MN LAW ENFORCEMENT
1040 AM 07/14/2010	HAIL M0.75 INCH	NNE MCKINLEY POLK	45.57N 92.18W WI TRAINED SPOTTER
1045 AM 07/14/2010	HAIL M0.75 INCH	HAUGEN BARRON	45.61N 91.78W WI TRAINED SPOTTER
ALSO LARGE TREE BRANCH DOWN AND HEAVY RAIN WITH DITCHES FLOODING			
1045 AM 07/14/2010	HAIL M0.88 INCH	3 SE MCKINLEY BARRON	45.54N 92.13W WI TRAINED SPOTTER
TIME WAS ESTIMATED			
1050 AM 07/14/2010	HAIL E1.00 INCH	2 W CUMBERLAND BARRON	45.54N 92.06W WI PUBLIC
REPORTED AT COMMUNITY CENTER.			
1050 AM 07/14/2010	HAIL M1.00 INCH	3 W CUMBERLAND BARRON	45.54N 92.09W WI TRAINED SPOTTER
1050 AM	TSTM WND DMG	2 W CUMBERLAND	45.54N 92.06W

07/14/2010

BARRON

WI PUBLIC

REPORTED BY COMMUNITY CENTER. TREE DOWN BLOCKING BOTH LANES OF HWY 48 TWO MILES WEST OF CUMBERLAND.

1054 AM TORNADO 2 WNW HAMMOND 44.98N 92.48W
07/14/2010 ST. CROIX WI NWS STORM SURVEY

30 HOUSES DAMAGED...INCLUDING ONE WITH ROOF TAKEN OFF. GARAGE AND SHEDS DESTROYED. NUMEROUS TREES BROKEN...DOWN OR SNAPPED. DAMAGE SURVEY DETERMINED TORNADO WAS RATED EF-1 AND WAS ON THE GROUND FOR 2.5 MILES AS IT MOVED NORTHEAST... DISSIPATING 3 MILES NORTH OF HAMMOND.

1059 AM TSTM WND DMG HAMMOND 44.97N 92.44W
07/14/2010 ST. CROIX WI EMERGENCY MNGR

30 REPORTS OF WIND DAMAGE BETWEEN CO RD TT AND HWY 12. TWO HOMES WERE DAMAGED...ONE WITH MAJOR DAMAGE AND ONE WITH MINOR DAMAGE.

1145 AM TSTM WND DMG 3 N BOYCEVILLE 45.09N 92.04W
07/14/2010 DUNN WI TRAINED SPOTTER

LARGE OAK TREE BRANCH DOWNED. REPORTED BY COCORAH'S OBSERVER.

1206 PM FLOOD RICE LAKE 45.50N 91.74W
07/14/2010 BARRON WI TRAINED SPOTTER

WATER 1 FT DEEP AT INTERSECTION OF KNAP AVE AND LINDEN AVE.

1248 PM HAIL CADOTT 44.95N 91.15W
07/14/2010 M0.75 INCH CHIPPEWA WI TRAINED SPOTTER

0220 PM TORNADO 6 NW NORTHFIELD 44.52N 93.25W
07/14/2010 DAKOTA MN NWS STORM SURVEY

AN NWS STORM SURVEY TEAM DETERMINED AN EF-0 TORNADO OCCURRED WITH A PATH LENGTH OF APPROXIMATELY 3.5 MILES. A TWO TON TRUCK WAS OVERTURNED ON INTERSTATE 35 AND A SMALL SHED WAS DAMAGED. ALSO...SOME TREES WERE UPROOTED ALONG WITH CROP DAMAGE.

0222 PM TSTM WND GST ST PAUL 44.95N 93.10W
07/14/2010 M56.00 MPH RAMSEY MN ASOS

MEASURED AT ST. PAUL AIRPORT. CORRECTED WIND GUST FROM 59MPH TO 56 MPH.

0223 PM TSTM WND DMG 3 N NEW MARKET 44.62N 93.35W
07/14/2010 SCOTT MN EMERGENCY MNGR

TREES AND BRANCHES DOWN AT INTERSECTION OF CO RD 8 AND 91.

0223 PM 07/14/2010	TSTM WND DMG	2 SE CREDIT RIVER SCOTT	44.66N 93.34W MN LAW ENFORCEMENT
CAMPER ROLLED OVER AT INTERSECTION OF HWY 8 AND 91. TREES ALSO DOWNED ON CANTER LN.			
0225 PM 07/14/2010	FUNNEL CLOUD	1 NE FARIBAULT RICE	44.31N 93.26W MN TRAINED SPOTTER
ROTATING WALL CLOUD JUST NORTH OF FARIBAULT.			
0228 PM 07/14/2010	HAIL M0.75 INCH	NEW MARKET SCOTT	44.57N 93.35W MN TRAINED SPOTTER
0228 PM 07/14/2010	TORNADO	1 N NORTHFIELD RICE	44.47N 93.17W MN NWS STORM SURVEY
AN NWS STORM SURVEY TEAM DETERMINED AN EF-0 TORNADO BRIEFLY TOUCHED DOWN WITH MINOR DAMAGE TO TREES.			
0228 PM 07/14/2010	FUNNEL CLOUD	N NORTHFIELD RICE	44.45N 93.17W MN TRAINED SPOTTER
ROTATING WALL CLOUD AND FUNNEL ALOFT			
0228 PM 07/14/2010	TSTM WND GST M62.00 MPH	LAKEVILLE DAKOTA	44.68N 93.24W MN AWOS
MEASURED AT LAKEVILLE AIRPORT			
0230 PM 07/14/2010	TORNADO	3 NE NORTHFIELD DAKOTA	44.49N 93.12W MN NWS STORM SURVEY
AN NWS STORM SURVEY TEAM DETERMINED AN EF-1 TORNADO OCCURRED WITH A PATH LENGTH OF APPROXIMATELY 1.5 MILES. DAMAGE WAS DONE TO ONE HOUSE...A CAMPER...AND MULTIPLE SHEDS. ALSO...A SEMI-TRUCK WAS OVERTURNED AND NUMEROUS TREES WERE UPROOTED.			
0230 PM 07/14/2010	FUNNEL CLOUD	3 NW NORTHFIELD DAKOTA	44.49N 93.21W MN TRAINED SPOTTER
0240 PM 07/14/2010	HEAVY RAIN M4.00 INCH	E GLENWOOD CITY ST. CROIX	45.06N 92.17W WI TRAINED SPOTTER
STORM TOTAL FROM 7 AM UNTIL 630 PM			
0242 PM 07/14/2010	FUNNEL CLOUD	5 SW GLENWOOD POPE	45.60N 95.46W MN PUBLIC
PUBLIC REPORT OF FUNNEL CLOUD ON HIGHWAY 28 BETWEEN GLENWOOD AND STARBUCK AIRPORT NEAR LAKE MINNEWASKA. RELAYED BY COUNTY DISPATCH.			
0243 PM 07/14/2010	FUNNEL CLOUD	CASTLE ROCK DAKOTA	44.56N 93.19W MN TRAINED SPOTTER

REPORTED AT HIGHWAY 23

0243 PM TORNADO 2 NW RANDOLPH 44.58N 93.09W
07/14/2010 DAKOTA MN STORM CHASER

0245 PM TSTM WND DMG HASTINGS 44.73N 92.85W
07/14/2010 DAKOTA MN TRAINED SPOTTER

2 FT DIAMETER TREE SNAPPED IN HALF AT 19TH AND VERMILLION
ST. 1 FT DIAMETER TREE SHEARED IN HALF AND BLOCKING
FRASER ST.

0245 PM HAIL NEW MARKET 44.57N 93.35W
07/14/2010 E1.00 INCH SCOTT MN PUBLIC

HAIL CRACKED WINDSHIELD OF CAR.

0245 PM TSTM WND DMG HAMPTON 44.61N 93.00W
07/14/2010 DAKOTA MN EMERGENCY MNGR

TREES AND POWERLINES DOWN AT INTERSECTION OF HWY 47 AND
52.

0250 PM TSTM WND DMG 3 ENE WATERTOWN 44.98N 93.79W
07/14/2010 WRIGHT MN TRAINED SPOTTER

TREE BRANCHES DOWN IN ROAD NEAR INTERSECTION OF CO RD 51
/ALTA RD/ AND CANNON RIVER BLVD. TIME ESTIMATED.

0254 PM TORNADO 5 WNW ELLSWORTH 44.77N 92.58W
07/14/2010 PIERCE WI NWS STORM SURVEY

TORNADO RATED EF-2 ON THE GROUND FOR APPROXIMATELY 15
MILES... DISSIPATING 3 MILES SOUTHWEST OF SPRING VALLEY.
TORNADO MOVED TO THE EAST-NORTHEAST. DAMAGE INCLUDED
STRUCTURAL DAMAGE TO HOUSES AND BARNs...AS WELL AS MANY
TREES SNAPPED.

0258 PM FUNNEL CLOUD 1 N RIVER FALLS 44.87N 92.62W
07/14/2010 ST. CROIX WI EMERGENCY MNGR

AT HWY 35 CO RD U. A TRAINED SPOTTER ALSO REPORTED FUNNEL
AT COUNTY TRUNK M AND APOLLO RD.

0300 PM TSTM WND DMG 5 S TURTLE LAKE 45.32N 92.16W
07/14/2010 BARRON WI TRAINED SPOTTER

1 INCH DIAMETER BRANCHES BROKEN AND A FEW TREES DOWN.

0300 PM TSTM WND DMG WOODVILLE 44.95N 92.29W
07/14/2010 ST. CROIX WI AMATEUR RADIO

TREE LIMBS IN EXCESS OF 4 INCHES DOWN

0306 PM TORNADO 6 SSE MARTEL 44.76N 92.34W
07/14/2010 PIERCE WI NWS STORM SURVEY

TORNADO RATED EF-2 ON THE GROUND FOR APPROXIMATELY 5 MILES. IT TOUCHED DOWN JUST SOUTH OF EL PASO AND MOVED NORTHEAST... DISSIPATING 1.5 MILES SOUTHWEST OF SPRING VALLEY. BARNS AND SHEDS DESTROYED. NUMEROUS TREES SNAPPED OR BROKEN.

0307 PM TSTM WND DMG 1 S MARTEL 44.82N 92.40W
07/14/2010 PIERCE WI TRAINED SPOTTER

HOUSE HEAVILY DAMAGED. TIME ESTIMATED.

0310 PM FUNNEL CLOUD 3 SSW SAUK CENTRE 45.70N 94.98W
07/14/2010 STEARNS MN TRAINED SPOTTER

RAPIDLY ROTATING WALL CLOUD REPORTED.

0315 PM HAIL SAUK CENTRE 45.74N 94.96W
07/14/2010 M0.75 INCH STEARNS MN TRAINED SPOTTER

0315 PM FUNNEL CLOUD 2 S SAUK CENTRE 45.71N 94.96W
07/14/2010 STEARNS MN AMATEUR RADIO

0317 PM TORNADO 2 WNW BOYCEVILLE 45.05N 92.08W
07/14/2010 DUNN WI NWS STORM SURVEY

EF-0 DAMAGE OCCURRED FROM A TORNADO THAT WAS ONE HALF MILE LONG AND MOVED NORTH-NORTHEAST. IT SNAPPED OR BROKE ABOUT TWO DOZEN TREES.

0320 PM TSTM WND DMG SPRING VALLEY 44.85N 92.24W
07/14/2010 PIERCE WI LAW ENFORCEMENT

NUMEROUS TREES DOWN FROM SPRING VALLEY EAST TO THE DUNN CO BORDER

0320 PM TSTM WND DMG BALDWIN 44.96N 92.37W
07/14/2010 ST. CROIX WI TRAINED SPOTTER

2 SEMI TRAILERS BLOWN OFF ROAD NEAR BALDWIN. INJURIES REPORTED. TREES ALSO DOWN IN AREA.

0324 PM TSTM WND DMG BOYCEVILLE 45.04N 92.04W
07/14/2010 DUNN WI PUBLIC

RELAYED THROUGH COUNTY DISPATCH. LARGE TREE GREATER THAN 1 FOOT DIAMETER UPROOTED.

0325 PM TSTM WND DMG MENOMONIE 44.89N 91.91W
07/14/2010 DUNN WI LAW ENFORCEMENT

TREES DOWN FROM THE PIERCE CO BOARDER EAST TO MENOMONIE.

0330 PM TSTM WND DMG MENOMONIE 44.89N 91.91W
07/14/2010 DUNN WI TRAINED SPOTTER

MANY TREES BLOWN DOWN IN NORTH MEMOMONIE. STREET BLOCKED

BY DOWNED TREES. SOME TREES DOWNED ONTO POWER LINES. TIME ESTIMATED.

0335 PM	TSTM WND DMG	2 SSW MENOMONIE	44.87N 91.93W
07/14/2010		DUNN	WI TRAINED SPOTTER

4 INCH DIAMETER TREES DOWN ONTO POWER LINES.

0342 PM	TSTM WND GST	MENOMONIE	44.89N 91.91W
07/14/2010	M59.00 MPH	DUNN	WI AWOS

REPORTED AT MENOMONIE AIRPORT

0350 PM	FUNNEL CLOUD	5 S HOLDINGFORD	45.66N 94.47W
07/14/2010		STEARNS	MN TRAINED SPOTTER

WALL CLOUD SPOTTED TOO FAR AWAY TO TELL IF IT WAS ROTATING.

0400 PM	HEAVY RAIN	2 NNE HAUGEN	45.63N 91.77W
07/14/2010	M4.40 INCH	BARRON	WI TRAINED SPOTTER

TOTAL RAINFALL FOR TODAY

0401 PM	FUNNEL CLOUD	CORNELL	45.16N 91.15W
07/14/2010		CHIPPEWA	WI TRAINED SPOTTER

ROTATING WALL CLOUD WEST NORTHWEST OF TOWN.

0410 PM	FUNNEL CLOUD	5 E RICE	45.75N 94.12W
07/14/2010		BENTON	MN TRAINED SPOTTER

0415 PM	HEAVY RAIN	6 WNW RICE LAKE	45.54N 91.85W
07/14/2010	M4.25 INCH	BARRON	WI TRAINED SPOTTER

7AM TO 415PM RAINFALL TOTAL.

0418 PM	HAIL	2 S RICE	45.72N 94.23W
07/14/2010	M1.00 INCH	STEARNS	MN TRAINED SPOTTER

0738 PM	TSTM WND GST	1 E MANSFIELD	43.57N 93.59W
07/14/2010	M42.00 MPH	FREEBORN	MN TRAINED SPOTTER

0750 PM	FUNNEL CLOUD	2 N RIVER FALLS	44.88N 92.62W
07/14/2010		ST. CROIX	WI TRAINED SPOTTER

NON ROTATING WALL CLOUD

0811 PM	FUNNEL CLOUD	HAMMOND	44.97N 92.44W
07/14/2010		ST. CROIX	WI TRAINED SPOTTER

NON ROTATING WALL CLOUD.

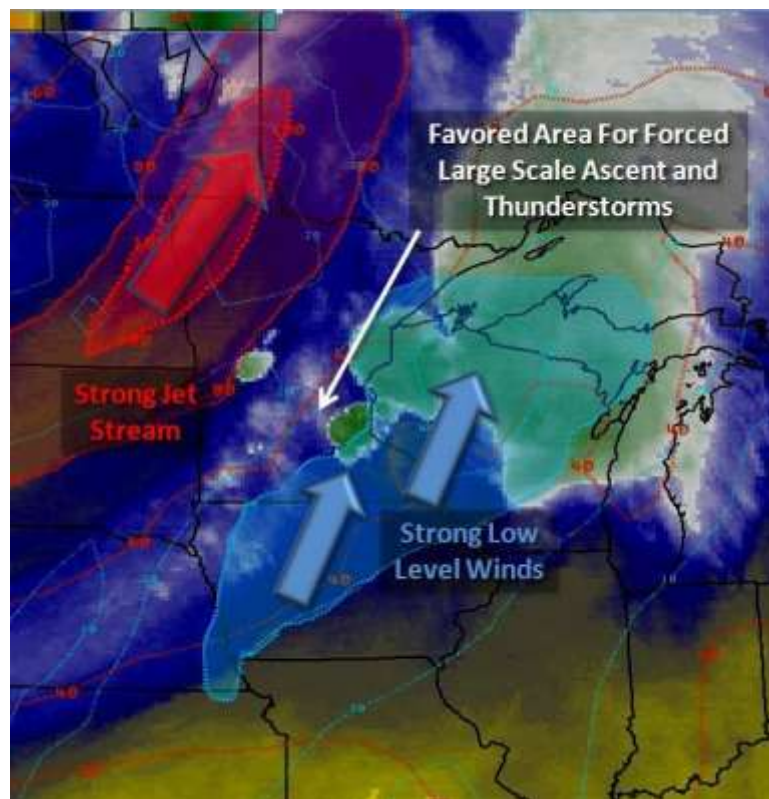
0822 PM	TSTM WND DMG	HERSEY	44.96N 92.21W
07/14/2010		ST. CROIX	WI LAW ENFORCEMENT

TREES UPROOTED

0840 PM	HAIL	3 W DALLAS		45.27N 91.88W
07/14/2010	E1.25 INCH	BARRON	WI	TRAINED SPOTTER
0840 PM	HAIL	2 N KNAPP		44.98N 92.08W
07/14/2010	M0.88 INCH	DUNN	WI	TRAINED SPOTTER
0843 PM	FUNNEL CLOUD	1 S MENOMONIE		44.87N 91.91W
07/14/2010		DUNN	WI	PUBLIC
0910 PM	HAIL	CHETEK		45.32N 91.65W
07/14/2010	M1.00 INCH	BARRON	WI	TRAINED SPOTTER

Environment

A deep low pressure system for mid-summer evolved east northeast across Minnesota on Wednesday afternoon and evening. This steered incredibly moist low level air northward, with dew points reaching as high as 79°F at the MSP International Airport, and the low 80s at a handful of southern Minnesota airports. This warm and moist low level air created explosive values of instability, as well as low cloud bases to more readily allow thunderstorm rotation closer to the ground. Strong southerly winds ushering this high dew point air in also created convergence for thunderstorms to develop along. Wind shear values were high as atmospheric winds increased rapidly with height and increased in speed markedly by Wednesday afternoon. High wind shear creates well defined thunderstorms, especially supercells within an unstable and moist atmosphere.



July 14th: 230 pm Water Vapor Image and Favorable Jet Alignment